Amendment to the Specification:

[0006] In practice, the treatment of the wastewater is achieved in 4 steps. In the first step (Aerobic Step) the wastewater begins in a storage tank and enters a mixing loop, where it is mixed with air, or oxygen, thus ensuring that the bacteria remain in contact with the column of wastewater. The mixing loop can be any device that allows the introduction of a gas, here oxygen or air, and provides for the gas to be dissolved in water. Examples include a venturi followed by a static mixer or a simple bubble-diffuser and contact column. The water then reenters the holding tank. The process whereby the organic nitrogen present in the wastewater is converted into nitrite and nitrate is delineated in Fig. 11. Organic nitrogen combines with hydrogen to form to form ammonia and ammonium ions ~~10~~ 1100. These two elements are in constant flux, and continue to change states. In the presence of water, ~~20~~ 1110, beneficial bacteria, such as *Nitrosomonas,* convert the ammonia and ammonium ions to Nitrites (NO_2). Finally, another strain of bacteria, such as *Nitrobacter*, convert the Nitrite (NO_2) to Nitrate (NO_3), ~~30~~ 1120. Finally, Nitrite and Nitrate are converted into atmospheric Nitrogen, 1130.

[0008] The anaerobic phase is illustrated in Fig. 12. Nitrate and Nitrite ~~10~~ 1200, through microbial action, react with a reductase, any catalyst which will begin the reaction, to Nitric Oxide (NO), ~~20~~1210. Subsequently the Nitric Oxide is converted to Nitrous Oxide (N_2O), ~~30~~ 1220, and is finally reduced to atmospheric Nitrogen (N2), ~~40~~ 1230.

[0031] In one embodiment, as shown in Figs. 2 through 6, the mixing loop consists of a venturi followed by a static mixer. As seen in the block diagram shown in Fig. 2, wastewater enters the holding tank ~~10~~200 at which time the controller initiates the aerobic biological step ~~20~~210. As wastewater enters the mixing loop ~~30~~220, ambient air, or a gas containing oxygen, is channeled into the venturi, ~~40~~230. Finally the water leaves the mixing loop and re-enters the holding tank ~~50~~240. At this point the controller initiates the anaerobic biological step ~~60~~250, wherein the process begins again, the only difference being that the source of oxygen is cut off from the mixing loop.

[0032] The construction of the venturi and static mixer, Fig. 3, allows for proper mixing of oxygen and bacteria in the water column. As wastewater enters the venturi ~~10~~50-a, ambient air, or a gas containing oxygen, is channeled via conduit ~~20~~70, connected to a gas source (not shown). After water passes through venturi ~~10~~50-a, the water enters a static mixer ~~30~~ 50-c. The mixer is shaped to churn the water as it passes. This facilitates mixing not only of dissolved oxygen, but also of the present bacteria. Finally the water leaves the mixing loop through pipe ~~40~~60, and re-enters the holding tank.

[0033] Fig. 4 illustrates how the flow of water, ~~10~~indicated by the directional arrows, is constricted by the walls of the venturi ~~20~~50. This decrease in volume, and increase in velocity, causes bacteria ~~30~~55, as well as oxygen, in the water column to come into contact with more water molecules. This ensures a more uniform concentration of oxygen and bacteria throughout the wastewater.

[0034] Turning to Fig.5, the final steps of the process include the settling and ozonation phases. Wastewater re-enters the holding tank after having undergone the anaerobic biological step,

~~10~~500. The controller initiates the settling phase and disengages the mixing loop ~~20~~510. At this point the biomass in the holding tank is allowed to settle, for 60 to 120 minutes, forming a supernatant water stratum at the bottom of the tank ~~30~~520. After sufficient time to achieve the precipitation of the supernatant water stratum, the controller initiates the ozonation step, ~~40~~ 530, and begins to channel ozone into the ozonation block. The wastewater then enters the ozonation block, ~~50~~540, which exists independently of the mixing loop. The ozonation block also consists of a venturi followed by a static mixer, ~~60~~550.

[0035] Fig. 6 illustrates the construction of the ozonation block, and its similarities to the mixing loop. As the water flow leaves the holding tank through pipe ~~10~~80, and travels toward the venturi, ~~20~~90-a, the gas conduit, ~~30~~100, allows a flow of ozone, ~~40~~90-b, rather than ambient air or oxygen, to enter the block. The static mixer, ~~50~~90-c, functions in the same manner as the mixer in the mixing loop and churns the water exposing the present bacteria to the ozone, thus deactivating the bacteria. The detoxified water is then discharged through pipe ~~60~~110.

[0036] In another embodiment, as shown in Figs. 7 through 10, the mixing loop consists of a contact column equipped with a gas diffuser. As seen in Fig. 7, wastewater enters the holding tank ~~10~~700 at which time the controller initiates the aerobic biological step ~~20~~710. As wastewater enters the mixing loop ~~30~~720, ambient air, or a gas containing oxygen, is channeled into the contact column ~~40~~730. The contact column can be any column known in the art, for example U.S. Patent No. 6,464,210. Subsequently, the water leaves the mixing loop and re-enters the holding tank ~~50~~740. At this point the controller initiates the anaerobic biological step, ~~60~~750, wherein the process begins again, the only difference being that the source of oxygen is cut off from the mixing loop.

[0037] The presence of the gas diffuser in the contact column as shown in Fig. 8, allows for proper mixing of oxygen and bacteria in the water column. As wastewater enters the mixing column, ambient air, or a gas containing oxygen, is channeled via conduit ~~20~~70, connected to a gas source (not shown). As the gas enters the contact column, it passes through a membrane ~~30~~50-e, which diffuses the incoming gas. The gas and water flow in opposite directions, this counter-current ~~40~~ results in greater distribution of oxygen throughout the water column. The agitation of the gas diffuser also increases mixing of the necessary bacteria. The water then leaves the mixing loop through pipe ~~50~~60, and re-enters the holding tank.

[0038] Turning to Fig.9, the final steps of the process include the settling and ozonation phases. Wastewater re-enters the holding tank after having undergone the anaerobic biological step, ~~10~~900. The controller initiates the settling phase and disengages the mixing loop ~~20~~910. At this point the biomass in the holding tank is allowed to settle, for 60 to 120 minutes, forming a supernatant water stratum at the bottom of the tank ~~30~~3920. After sufficient time to achieve the precipitation of the supernatant water stratum, the controller initiates the ozonation step, ~~40~~930, and begins to channel ozone into the ozonation block. The wastewater then enters the ozonation block, ~~50~~940, which exists independently of the mixing loop. The ozonation block also consists of a contact column equipped with a gas diffuser, ~~60~~950.

[0039] Fig. 10 illustrates the construction of the ozonation block, and its similarities to the mixing loop. As the water flow leaves the holding tank through pipe ~~10~~80, and enters the

contact column, ~~20~~90, the gas conduit, ~~30~~100, allows a flow of ozone rather than ambient air or oxygen, to enter the block. As the ozone enters the contact column, it passes through a membrane, 8-~~40~~90-e, which diffuses the incoming ozone. As shown in figure 8, the gas and water flow in opposite directions, this counter-current ~~50~~ causes greater distribution of oxygen throughout the water column. The agitation of the gas diffuser also increases exposure of the necessary bacteria to the ozone. The detoxified water is then discharged through pipe ~~60~~110.